

10. Lower the ATV so both front wheels are on the ground.
11. Start the engine and test ride it slowly on level ground. Steer straight ahead and make sure the handlebar does not turn toward the left- or right-side.

Rear Suspension Check

1. Support the ATV so the rear wheels are off the ground.
2. Try to move the rear axle (**Figure 57**) sideways while checking for excessive play at the swing arm bearings.
3. If there is any play, check the swing arm pivot bolts for looseness (Chapter Twelve). If they are tightened properly, the swing arm bearings may require replacement. See Chapter Twelve.
4. Lower the ATV so all four tires are on the ground.

Skid Plates

Check the front, middle and rear skid plates for damage and loose mounting bolts. Repair or replace

damaged skid plates. Replace missing or damaged mounting bolts. Tighten the mounting bolts securely.

Fasteners

Constant vibration can loosen many of the fasteners on the ATV. Check the tightness of all fasteners, especially those on:

1. Engine mounting hardware.
2. Cylinder head bracket bolts.
3. Engine crankcase covers.
4. Handlebar.
5. Gearshift lever.
6. Brake pedal and lever.
7. Exhaust system.
8. Steering and suspension components.

ENGINE TUNE-UP

A tune-up is general adjustment and maintenance to ensure peak engine performance.

The following section discuss each phase of a proper tune-up which should be performed in the order given. Unless otherwise specified, the engine should be thoroughly cool before any tune-up procedure is started.

Have the new parts on hand before beginning.

Camshaft Chain Adjustment

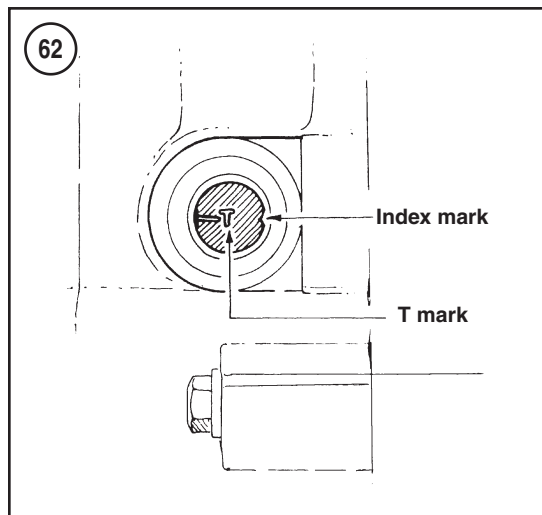
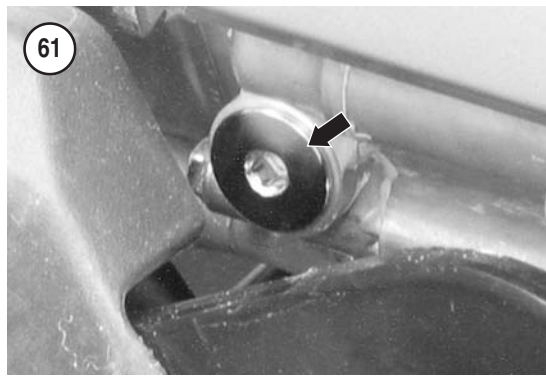
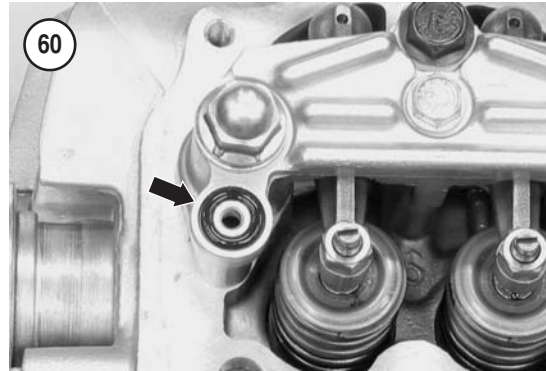
The engine is equipped with an automatic camshaft chain tensioner. No adjustment is required.

Valve Clearance Check and Adjustment

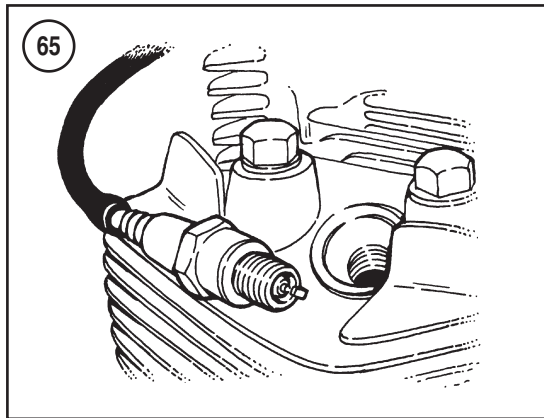
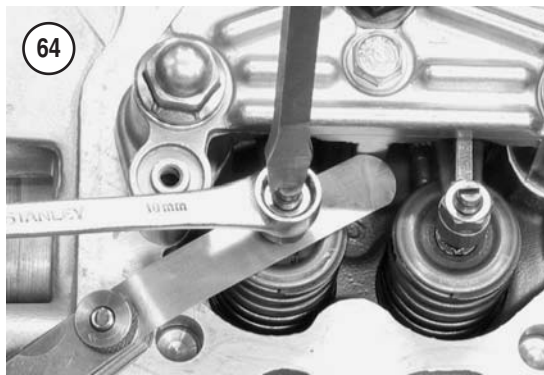
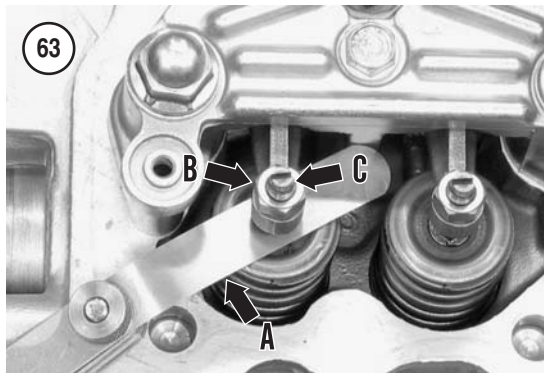
Check and adjust the valve clearance while the engine is cold (below 35° C [95° F]).

1. Park the ATV on level ground and set the parking brake.
2. Remove the recoil starter cover (**Figure 58**).
3. Remove the fuel tank and the engine heat guard (Chapter Eight).
4. Remove the bolts and the cylinder head cover (**Figure 59**) and gasket.
5. Remove the O-ring (**Figure 60**).
6. Remove the spark plug. This will make it easier to turn the engine with the recoil starter and align the timing marks.

7. Remove the timing hole cap (**Figure 61**).
8. The engine must be set to top dead center (TDC) on its compression stroke for checking and adjusting the valve clearance. Perform the following:
 - a. Pull the recoil starter handle slowly and align the T mark on the flywheel with the index mark on the rear crankcase cover (**Figure 62**).
 - b. Move both rocker arms by hand. When the engine is set at TDC on its compression stroke, both rocker arms will have some side clearance, indicating that the intake and exhaust valves are closed. If the rocker arms are tight (indicating that the valves are open), turn the crankshaft 360° and realign the T mark as described in substep a. The engine should now be set at TDC on its compression stroke.
9. Check the clearance of both the intake valve and exhaust valve by inserting a flat feeler gauge between the rocker arm pad and the valve stem (A, **Figure 63**). See **Table 9** for the intake and exhaust valve clearances. When the clearance is correct, there will be a slight resistance on the feeler gauge when it is inserted and withdrawn.
10. Adjust the valve clearance as follows:
 - a. Loosen the locknut (B, **Figure 63**) and turn the adjuster (C) in or out until the clearance is correct. There should be a slight resistance felt when the feeler gauge is drawn from between the adjuster and valve tip.
 - b. Hold the adjuster to prevent it from turning and tighten the locknut securely as shown in **Figure 64**.
 - c. Recheck the clearance to make sure the adjuster did not move when the locknut was tightened. If necessary, readjust the valve clearance.
11. Install the spark plug and spark plug cap. Tighten the spark plug to 18 N•m (13 ft.-lb.).
12. Inspect the O-ring for cracks or other damage and replace it if necessary.
13. Lubricate the O-ring with oil and install it into the rocker arm holder groove (**Figure 60**).
14. Remove all gasket residue from the cylinder head cover and cylinder head gasket surfaces. Replace the cylinder head cover gasket if it is leaking or damaged.
15. Install the cylinder head cover gasket.
16. Clean the cylinder head cover and oil passages with solvent and compressed air.



17. Install the cylinder head cover (**Figure 59**) and tighten the mounting bolts securely.
18. Install the timing hole cap and O-ring, and tighten to 10 N•m (88 in.-lb.).
19. Install the engine heat guard and fuel tank (Chapter Eight).
20. Install the recoil starter cover (**Figure 58**).



Cylinder Compression

A cylinder compression test is one of the quickest ways to check the condition of the rings, head gasket, piston and cylinder. It is a good idea to check compression during each tune-up, and compare it with the reading obtained at the next tune-up. This will help spot any developing problems.

1. Warm the engine to normal operating temperature.

2. Remove the spark plug. Insert the plug into the plug cap and ground the plug against the cylinder head (**Figure 65**).

3. Install a compression gauge into the cylinder head spark plug hole. Make sure the gauge is seated properly against the hole.

4. Turn the engine stop switch off.

NOTE

The battery must be fully charged when the engine is cranked over with the starter or a false compression reading may be obtained. Because the engine must be turning at least 450 rpm when the compression test is made, do not use the recoil starter to turn the engine over.

5. Hold the throttle wide open and crank the engine with the starter for several revolutions until the gauge stabilizes at its highest reading. Record the pressure reading and compare it to the specification in **Table 9**. Press the gauge button to release pressure from the gauge.

6. If the reading is higher than normal, there may be a buildup of carbon deposits in the combustion chamber or on the piston crown. This condition can cause detonation and overheating. Service the piston as described in Chapter Four.

7. Low compression readings indicate a leaking cylinder head gasket, a leaking valve or worn, stuck or broken piston rings. To determine which, pour about a teaspoon of engine oil through the spark plug hole onto the top of the piston. Crank the engine once to distribute the oil, then make another compression test and record the reading. If the compression increases significantly, the valves are good but the rings are worn or damaged. If compression does not increase, the valves or the cylinder head gasket is leaking. A valve could be hanging open or a piece of carbon could be on the valve seat.

NOTE

*If worn, stuck or broken piston rings are suspected, disconnect the crankcase breather tube (**Figure 66**) while the engine is running. If there is smoke inside the tube, check for a stuck or damaged piston ring(s).*

8. Remove the compression tester. Install the spark plug and reconnect the spark plug cap.

NOTE

If the compression is low, the engine cannot be tuned to maximum performance.

Spark Plug Removal

1. Grasp the spark plug lead as near the plug as possible and pull it off the plug. If it is stuck to the plug, twist it slightly to break it loose.

CAUTION

Whenever the spark plug is removed, dirt around it can fall into the plug hole. This can cause expensive engine damage.

2. Blow away any dirt that has collected around the spark plug.
3. Remove the spark plug (**Figure 67**) with a spark plug socket.

NOTE

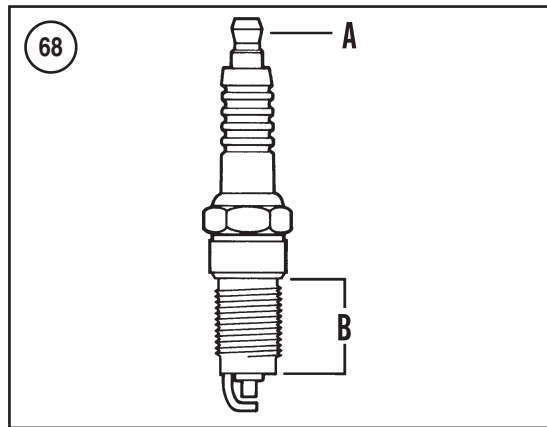
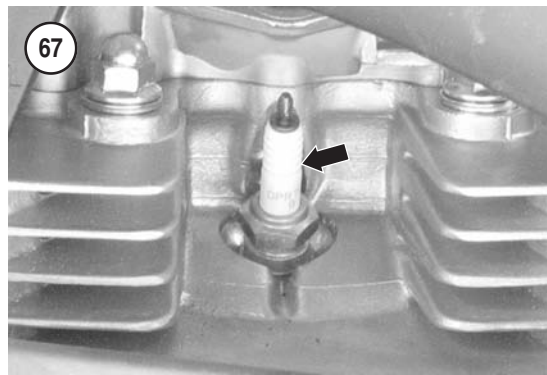
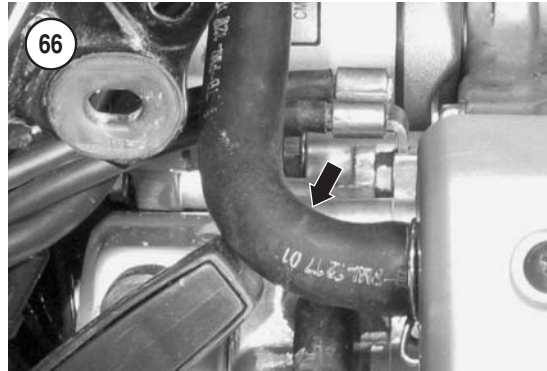
If the plug is difficult to remove, apply penetrating oil, like WD-40 or Liquid Wrench, around the base of the plug and let it soak about 10-20 minutes.

4. Inspect the plug carefully. Look for a broken center porcelain, excessively eroded electrodes and excessive carbon or oil fouling.

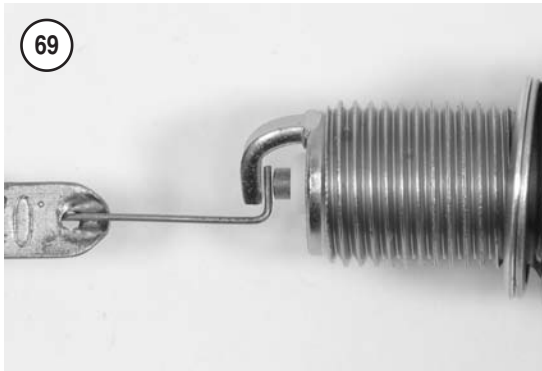
Spark Plug Gap and Installation

Carefully adjust the electrode gap on a new spark plug to ensure a reliable, consistent spark. Use a spark plug gapping tool and a wire feeler gauge.

1. Remove the terminal nut from the end of the plug (A, **Figure 68**).
2. Insert a wire feeler gauge between the center and side electrode of the plug (**Figure 69**). The correct gap is listed in **Table 9**. If the gap is correct, a slight drag will be felt while the wire is pulled through. If there is no drag, or the gauge will not pass through, bend the side electrode with a gapping tool (**Figure 70**) to set the proper gap.
3. Apply an anti-seize compound to the plug threads before installing the spark plug. Do not use engine oil on the plug threads.



4. Screw the spark plug in by hand until it seats. Very little effort should be required. If force is necessary, the plug may be cross-threaded. Unscrew it and try again.
5. Use a spark plug wrench and tighten the new spark plug to 18 N•m (13 ft.-lb.). If a torque wrench is not available, tighten the plug an additional 1/4 to 1/2 turn after the gasket has made contact with the head. When installing a used spark plug, only tighten an additional 1/4 turn. Do not overtighten.



Spark Plug Heat Range

Spark plugs are available in various heat ranges that are either hotter or colder than the original plug. However, in most cases the heat range of the spark plug originally installed by the manufacturer (**Table 9**) will perform adequately under most conditions.

Select plugs with a heat range designed for the anticipated load and operating conditions. A plug with an incorrect heat range can foul, overheat and cause piston damage. Do not change the spark plug heat range to compensate for adverse engine or carburetor conditions.

In general, use a hot plug for low speeds and low temperatures. Use a cold plug for high speeds, high loads and high temperatures. The plug should operate hot enough to burn off unwanted deposits but not so hot that it becomes damaged or causes preignition. Determine if plug heat range is correct by examining the insulator as described in *Spark Plug Reading* in this section.

When replacing plugs, make sure the reach or thread length (B, **Figure 68**) is correct. The thread length of any replacement spark plug must be the same as the original, which matches the length of

the threads in the cylinder head. A longer than standard plug could interfere with the piston and cause engine damage. A shorter plug provides poor ignition.

Spark Plug Reading

Reading the spark plug can provide information about engine performance. Reading a plug that has been in use indicates spark plug operation, air/fuel mixture composition and engine conditions (such as oil consumption and pistons). Before checking the spark plug, operate the ATV under a medium load for approximately 6 miles (10 km). Avoid prolonged idling before shutting off the engine. Remove the spark plug as described in this section. Examine the plug, and compare it to those shown in **Figure 71**, typical. Refer to the following sections to determine the operating conditions.

When reading the plugs to evaluate carburetor jetting, start with a new plug and operate the ATV at the load that corresponds to the jetting information desired. For example, if the main jet is in question, operate the ATV at full throttle; shut the engine off and coast to a stop.

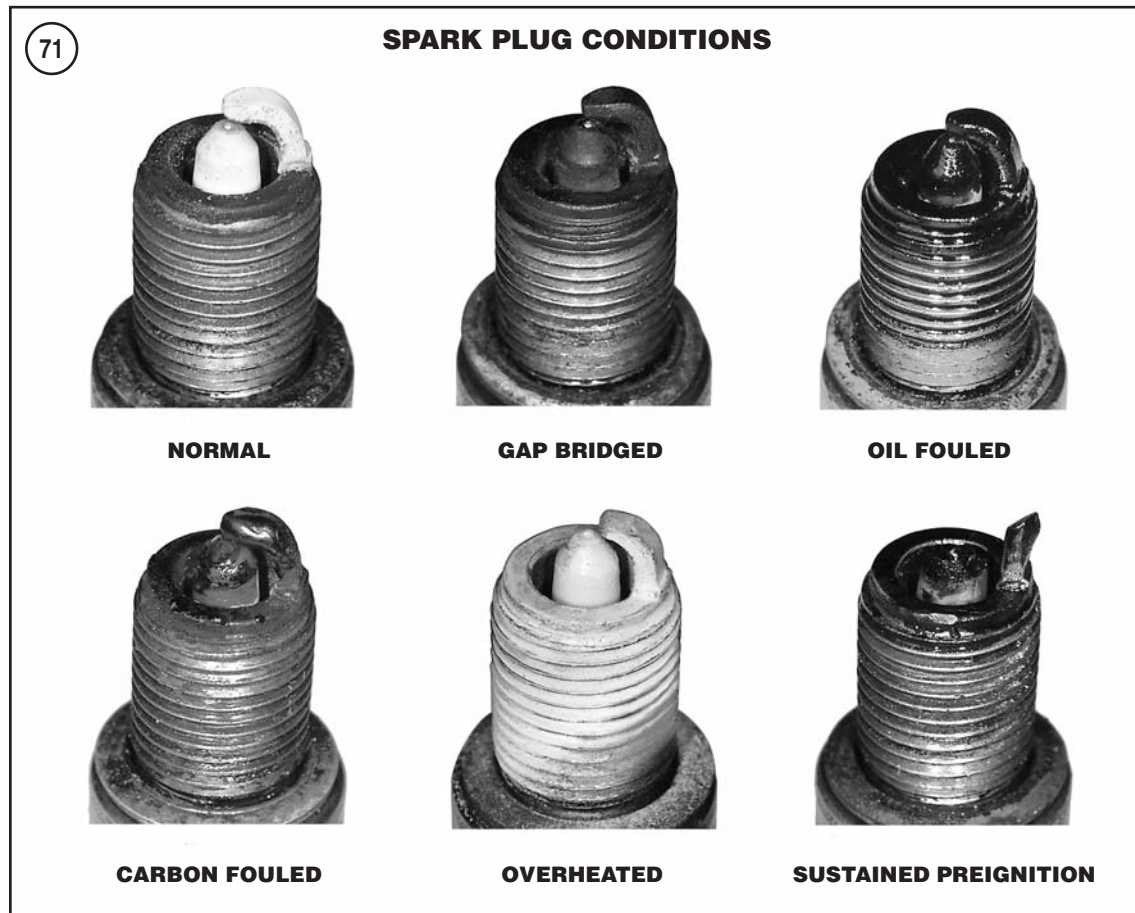
Normal condition

If the plug has a light tan- or gray-colored deposit and no abnormal gap wear or erosion, the engine, carburetion and ignition condition are good. The plug in use is of the proper heat range and may be serviced and returned to use.

Carbon fouled

Soft, dry, sooty deposits covering the entire firing end of the plug are evidence of incomplete combustion. Even though the firing end of the plug is dry, the plug's insulation decreases. An electrical path is formed that lowers the voltage from the ignition system. Engine misfiring is a sign of carbon fouling. Carbon fouling can be caused by one or more of the following:

1. Too rich fuel mixture.
2. Spark plug heat range too cold.
3. Clogged air filter.
4. Retarded ignition timing.
5. Ignition component failure.
6. Low engine compression.



7. Prolonged idling.

Oil fouled

An oil fouled plug has a black insulator tip, a damp oily film over the firing end and a carbon layer over the entire nose. The electrodes are not worn. Common causes for this condition are:

1. Incorrect carburetor jetting.
2. Low idle speed or prolonged idling.
3. Ignition component failure.
4. Spark plug heat range too cold.
5. Engine still being broken in.

An oil fouled spark plug may be cleaned in an emergency, but it is better to replace it. It is important to correct the cause of fouling before the engine is returned to service.

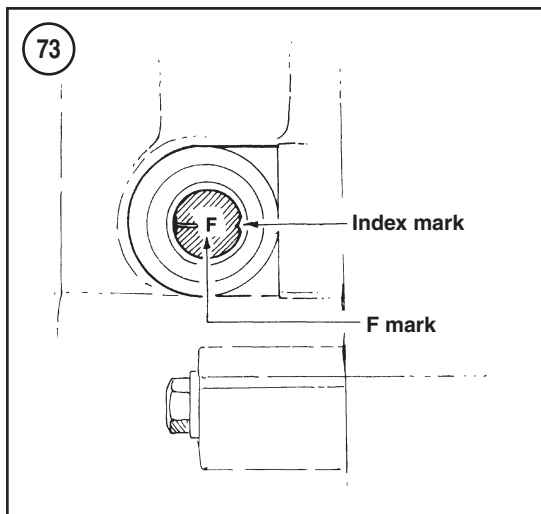
Gap bridging

Plugs with this condition exhibit gaps shorted out by combustion deposits between the electrodes. If this condition is encountered, check for an improper oil type or excessive carbon in the combustion chamber. Be sure to locate and correct the cause of this condition.

Overheating

Badly worn electrodes and premature gap wear, along with a gray or white blistered porcelain insulator surface are signs of overheating. The most common cause for this condition is using a spark plug of the wrong heat range (too hot). If a hotter spark plug has not been installed, but the plug is overheated, consider the following causes:

1. Lean fuel mixture.
2. Ignition timing too advanced.
3. Engine lubrication system malfunction.



4. Engine vacuum leak.
5. Improper spark plug installation (too tight).
6. No spark plug gasket.

Worn out

Corrosive gases formed by combustion and high voltage sparks have eroded the electrodes. Spark plugs in this condition require more voltage to fire under hard acceleration. Replace with a new spark plug.

Preignition

If the electrodes are melted, preignition is probably the cause. Check for carburetor mounting or intake manifold leaks and over-advanced ignition timing. It is also possible that a plug of the wrong heat range (too hot) is being used. Find the

cause of the preignition before returning the engine into service.

Ignition Timing

All models are equipped with a capacitor discharge ignition system (CDI). Ignition timing is not adjustable. Check the ignition timing to make sure all components within the ignition system are working correctly. If the ignition timing is incorrect, troubleshoot the ignition system as described in Chapter Two. Incorrect ignition timing can cause a drastic loss of engine performance and efficiency. It may also cause overheating.

Before starting this procedure, check all electrical connections related to the ignition system. Make sure all connections are tight and free from corrosion, and all ground connections are clean and tight.

1. Start the engine and let it warm approximately 2-3 minutes.
2. Park the ATV on level ground and apply the parking brake. Shut off the engine.
3. Remove the timing hole cap and O-ring (**Figure 72**).
4. Connect a portable tachometer following its manufacturer's instructions.
5. Connect a timing light following its manufacturer's instructions.
6. Restart the engine and let it run at the idle speed indicated in **Table 9**. Adjust the idle speed if necessary as described in this chapter.
7. Aim the timing light at the timing hole and pull the trigger. The F mark on the flywheel should align with the index mark on the rear crankcase cover as shown in **Figure 73**. If the ignition timing is incorrect, troubleshoot the ignition system as described in Chapter Two.
8. Turn the ignition switch off and disconnect the timing light and portable tachometer.
9. Install the timing hole cap and O-ring, and tighten to 10 N•m (88 in.-lb.).

Pilot Screw Adjustment

The pilot screw does not require adjustment unless the carburetor has been overhauled or a new pilot screw was installed. To adjust the pilot screw under these conditions, refer to *Carburetor Adjustments* in Chapter Eight.

Idle Speed Adjustment

1. Start the engine and let it warm up approximately 10 minutes.
2. Park the ATV on level ground, apply the parking brake and shut off the engine.
3. Connect a portable tachometer to the engine following the manufacturer's instructions.
4. Restart the engine and turn the idle adjust screw (**Figure 74**) to set the idle speed. See **Table 9** for the idle speed specification.
5. Open and close the throttle a couple of times and check for variation in idle speed. Readjust if necessary.

WARNING

With the engine idling, move the handlebar from side to side. If idle speed increases during this movement, the throttle cable needs adjusting or may be incorrectly routed through the frame. Correct this problem immediately. Do not ride the vehicle in this unsafe condition.

6. Turn the engine off and disconnect the portable tachometer.
7. Install the right lower side cover (Chapter Fifteen).

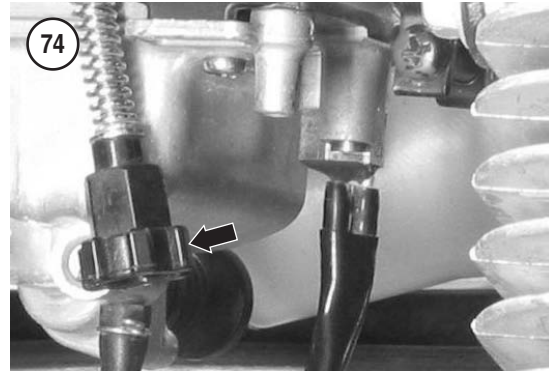
STORAGE

Several months of inactivity can cause a general deterioration of the ATV. This is especially true in extreme climates. This section describes procedures on how to prepare the ATV for storage.

Selecting a Storage Area

The most likely place to store the ATV is in a home garage or workshop. If a home garage or suitable building is not available, facilities suitable for long-term vehicle storage are readily available for rent or lease in most areas. When selecting a building, consider the following points.

1. The storage area must be dry. Heating is not necessary, but the building should be well insulated to minimize extreme temperature variation.
2. Buildings with large window areas should be avoided, or such windows should be masked if direct sunlight can fall on the ATV.



Preparing ATV for Storage

Careful preparation will minimize deterioration and make it easier to restore the ATV to service later. Use the following procedure.

1. Wash the ATV completely. Be sure to remove all dirt in all the hard to reach areas. Completely dry all parts.
2. Run the engine long enough to warm the engine oil. Drain the oil, regardless of the time since the last oil change. Refill with the normal quantity and type of oil as described in this chapter.
3. Drain all gasoline from the fuel tank, fuel hose, and the carburetor. Make sure the fuel tank filler cap is tightened securely and the vent hose is connected properly.
4. Clean and lubricate the control cables as described in this chapter.
5. Remove the spark plug and add about one tablespoon of engine oil into the cylinder. Then turn the engine over the recoil starter to distribute the oil to the cylinder wall and piston. Reinstall the spark plug and connect the spark plug cap.
6. Tape or tie a plastic bag over the end of the muffler to prevent the entry of moisture.
7. Inflate the tires to the correct pressure and move the ATV to the storage area. Support the ATV with all four wheels off the ground.
8. Remove the battery and charge it as described in this chapter. Then store the battery in a safe area away from freezing or excessively warm temperatures. Inspect and charge the battery once a month.
9. Clean the battery terminals, then lubricate them with dielectric grease.
10. When storing the ATV in a humid or salt-air area, spray all exposed metal surfaces with a light film of oil. Do not spray the seat, tires or any rubber part.

Copyright of Honda TRX350 RANCHER, 2000-2006 is the property of Penton Media, Inc. ("Clymer") and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.